

CHAPTER 10

SPECIFICATION FOR MODEL 2070 PERIPHERAL EQUIPMENT AND THE MODEL 2070N CONTROLLER UNIT

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GENERAL NOTES:

- 1. The 2070-6 and 2070-7 Modules shall provide circuitry to disable its Channel 2 signal lines when a ground-true state is presented at Hx Pin B21. The Disable line shall normally be pulled up on the module.**
- 2. (*) Line drivers/receivers shall be socket mounted.**
- 3. (*) Isolation circuitry shall be by opto or capacitive coupled isolation technologies. Each module's CIRCUIT shall be capable of reliably passing a minimum of 1.0 megabps .**

SECTION 1 - MODEL 2070-6 A & B ASYNC/MODEM SERIAL COMM MODULES

10.1.1 (*) A fused isolated +5 VDC, shall be provided for external use. A minimum of 100 mA power shall be available.

10.1.2 Two circuits, designated CIRCUIT #1 and CIRCUIT #2, shall be provided. Both circuit functions shall be identical, except for their Serial Communications Port and external connector (CIRCUIT #1 to SP1 [or SP3] and C2S Connector and CIRCUIT #2 to SP2 [or SP4] and C20S Connector).

10.1.2.1 (*) The Circuits shall convert the 2070 UNIT Motherboard SP EIA-485 signals to/from board TTL level signals, isolate and drive the converted EIA-232 Signals interfacing with their associated MODEM and external connector.

10.1.3 Each CIRCUIT shall have a MODEM with the following requirements:

- 1. Data Rate:** baud modulation of 300 to 1200 for Module 2070-6A and 0 to 9600 for Module 2070-6B
- 2. Modulation:** Phase coherent frequency shift keying (FSK)
- 3. Data Format:** Asynchronous, serial by bit
- 4. Line & Signal Requirements:** Type 3002 voice-grade, unconditioned
- 5. Tone Carrier Frequencies (Transmit and Receive)**
2070-6A - 1.2 KHz MARK and 2.2 KHz SPACE, $\pm 1\%$ tolerance
2070-6B - 11.2 KHz MARK and 17.6 KHz SPACE, $\pm 1\%$ tolerance
The operating band shall be (half power, -3 dB) between 1.0 KHz & 2.4 KHz for 2070-6A and 9.9 KHz & 18.9 KHz for 2070-6B.
- 6. Transmitting Output Signal Level:** 0, -2, -4, -6, and -8 dB (at 1.7 KHz for 2070-6A & 14.7 KHz for 2070-6B) continuous or switch selectable
- 7. Receiver Input Sensitivity:** 0 to -40 dB
- 8. Receiver Bandpass Filter:** Shall meet the error rate requirement specified below and shall provide 20 dB/octave, minimum active attenuation for all frequencies outside the operating band.
- 9. Clear-to-Send (CTS) Delay:** 12 ± 2 ms
- 10. Receive Line Signal Detect Time:** 8 ± 2 ms mark frequency
- 11. Receive Line Squelch:** 6.5 (± 1) ms, 0 ms (OUT)
- 12. Soft Carrier Turn Off Time:** 10 ± 2 ms (0.9 KHz for 2070-6A and 7.8 KHz for 2070-6B)

13. **Modem Recovery Timer:** Capable of receiving data within 22 ms after completion of transmission
14. **Error Rate:** Shall not exceed 1 bit in 100 Kbits, with a signal-to-noise ratio of 16 dB measured with flat-weight over a 300 to 3,000 Hz band
15. **Transmit Noise:** Less than -50 dB across 600-ohms resistive load within the frequency spectrum of 300 to 3,000 Hz at maximum output
16. **Modem interface:** EIA-232 Standards

10.1.4 (*) Two LOGIC switches per circuit shall be provided (faceplate mounted).

10.1.4.1 (*) One shall be used to vertically switch between Half-Duplex (Down) and Full-Duplex (Up). In Half-Duplex mode, the Transmit connections shall be used for both Receive and Transmit.

10.1.4.2 (*) The ENABLE/DISABLE switch shall switch the EIA-232 lines between routing to the associated MODEM or the C2/C20 Connectors. ENABLE (Up) shall route the lines to its MODEM and disconnect the lines from the associated connector. DISABLE (Down) shall disconnect lines from its associated MODEM and route them to its associated Connector.

10.1.5 (*) A CONTROL switch shall be provided on the module front panel to turn ON (Up) / OFF (Down) all module power.

SECTION 2 MODEL 2070-7A & 7B ASYNC SERIAL COMM MODULE

10.2.1 (*) Two circuits, designated **CIRCUIT #1** and **CIRCUIT #2**, shall be provided. Their functions are identical, except for the CPU sourced Serial Communications Port and external connector (**CIRCUIT #1** to **SP1** [or **SP3**] and Connector **C21S** and **CIRCUIT #2** to **SP2** [or **SP4**] and Connector **C22S**)..

10.2.2 (*) **2070 -7A** Each circuit shall convert its **EIA-485** signal lines (**RX**, **TX**, **RTS**, **CTS** and **DCD**) to / from board **TTL** Level Signals; isolate both signal and ground; and drive / receive external **EIA 232** devices via **C21 / C22** Connectors. Connectors shall be **DB-9S** type.

10.2.3 (*) **2070 - 7B** Each circuit **EIA -485** signal lines ,(RX, TX, **TXC (I)**, **TXC(O)** and **RXC**) and associated signal ground shall be board terminated to matching drivers / receivers; isolated both signal and ground,; and drive / receiver external **EIA 485** devices via **C21 / C22** Connectors. Connectors shall be **DB-15S** type.

10.2.4 (*) Each circuit signal **TX** and **RX** line shall have a **LED** Indicator mounted on the frontplate and labeled to function.

SECTION 3 - OTHER COMMUNICATION MODULES - FUTURE

THERE ARE CURRENTLY NO MODULES IN THIS SECTION.

SECTION 4 - MODEL 2070N CONTROLLER UNIT

10.4.1 GENERAL

10.4.1.1 (*) The MODEL 2070N CONTROLLER UNIT shall consist of the Model 2070 Controller Unit; Model 2070-2B Field I/O Module resident in 2070 Unit Slot H3; Model 2070-6B Serial Comm Module resident in 2070 Unit Slot H1; Model 2070-8 NEMA Interface Module physically and electrically attached to the 2070 Unit; and the 2070N Back Cover.

10.4.1.2 The Model 2070-8 NEMA Interface Module Chassis and 2070N Back Cover shall be made of 1.524 mm minimum aluminum sheet and treated with clear chromate. All external screws, except where called out, shall be countersunk and shall be Phillips flat head stainless steel. The matching nuts shall be permanently captive on the mating surfaces.

10.4.1.3 A permanent label shall be affixed to the Model 2070-8 Front Panel. The label shall display the unit's serial number. The number shall be permanent and easy to read.

10.4.2 MODEL 2070-8 NEMA INTERFACE MODULE

10.4.2.1 The Module shall consist of the Module Chassis, Module Power Supply, FCU Controller, Parallel Input/Output Ports, Serial Communications Circuits and Module Connectors.

10.4.2.2 The Module Front Panel shall be furnished with the following :

10.4.2.2.1 ON/OFF POWER Switch mounted vertically with ON in the UP Position
(*)

10.4.2.2.2 A LED DC Power Indicator. The indicator shall indicate that the required + 5 VDC is within 5% and the +24 VDC is within 8%.

10.4.2.2.3 Incoming VAC fuse protection

10.4.2.2.4 Two DB-25S COMM connectors labeled "EX1" & "EX2"

10.4.2.2.5 Four NEMA Connectors A, B, C, & D

10.4.2.3 A MODULE POWER SUPPLY shall be provided and located on the right side of the module as viewed from the front. The supply shall provide the necessary module internal circuitry DC power plus 2.0 Amperes minimum of +24 VDC for external logic, detector inputs, and output load control. The supply shall meet the following requirements:

10.4.2.3.1 Specification 9.5.1.7 INPUT PROTECTION

10.4.2.3.2 Specification 9.5.2 POWER SUPPLY REQUIREMENTS except Spec 9.5.2.1.

10.4.2.3.3 DC Voltage tolerances shall be $\pm 3\%$.

10.4.2.4 The supplied incoming AC Power shall be derived from Connector A Pins "p" (AC+) and "U" (AC Neutral). External +24 VDC shall be at Connector A, Pin "B" and Connector D Pin "NN."

10.4.2.5 AC Power for the 2070 receptacle shall be tapped off from the secondary side of the ON Switch / Fuse configuration.

10.4.2.6 A module PCB Boards shall be mounted vertically.

10.4.2.7 Power Failure, Power Up, and LINESYNC shall be routed to the module via C12 Connector. The state of the output ports at the time of power up or below power failure threshold shall be an open circuit.

10.4.2.8 The Model 2070-8 NEMA Interface Module shall meet all requirements under CHAPTER 9 SECTION 3 with the following exceptions:

10.4.2.8.1 PARALLEL PORTS - 118 Bits of Input and 102 bits of Output shall be provided. Specification for inputs applies except the voltage is +24 in lieu of +12 and Ground False, "0," exceeds 16.0 VDC. LINESYNC signal is incoming in differential logic.

10.4.2.8.4 (*) SERIAL COMMUNICATION CIRCUITRY - The module shall interface with the 2070-2B Field I/O module via HAR 1 Harness meeting EIA-485 Requirements. All signal lines shall be isolated. HAR 1 Harness shall be 21 lines minimum with a C12P Connector on one end and soldered with strain relief on the other. In addition to the Controller interface, the EIA-485 Signal lines shall be routed to EX1 Connector. All necessary driver/receiver and isolation circuitry shall be provided.

10.4.2.9 An EIA-232 Serial Port shall be provided with rate selection by jumper of 0.3, 1.2, 2.4, 4.8, 9.6, 19.2, & 38.4 Kbps asynchronous and shall be connected at EX1 Connector.

10.4.2.10 A 22-line minimum HAR 2 Harness shall be provided between EX2 Connector and Model 2070-6 Serial COMM Module in the 2070 UNIT. This provides two Modems or EIA-232 Interfaces with the 2070 UNIT and the outside world.

10.4.2.11 Fault/Voltage Monitor circuitry shall be provided to monitor CPU/FCU communications and operations and the module VDC Supplies.

10.4.2.11.1 The FCU Port 10, bit 7 output shall normally change its state every 100 ms. This state change shall immediately cease if either the communications between the 2070 Unit CPU and the FCU goes down or the FCU malfunctions. A module Watchdog circuit (WDT) shall monitor the output. If there is no state change for 2 ± 0.1 seconds, the circuitry shall output a GROUND FALSE to both Connector A, Pin A (Fault Monitor) and to the Voltage Monitor Circuitry. Should the FCU Output begin changing state, the WDT output shall return to a GROUND TRUE state.

10.4.2.11.2 The Voltage Monitoring Circuitry shall monitor the +5 & +24 VDC Power supplies and logically OR its output state with the WDT output. If either voltages exceed $\pm 5\%$ for +5 VDC and 8% for +24 VDC, the monitor circuitry shall output a GROUND FALSE to Connector A Pin C. Recovery of either monitors shall cause a GROUND TRUE state at Pin C.

10.4.3 The 2070N Back Cover shall be provided to protect the interface harnesses. The Back Cover shall be delivered attached to the 2070 ATMS Controller Unit and 2070-8 NEMA Interface Module per Section 5 Details.

SECTION 5

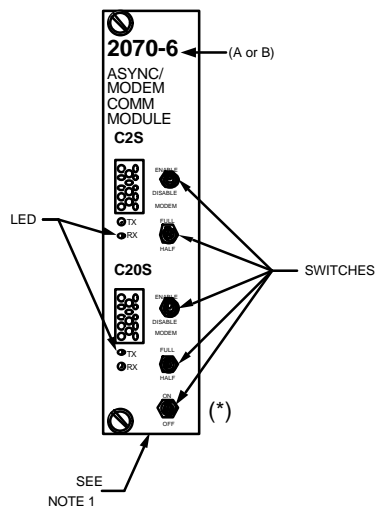
CHAPTER DETAILS

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Section Notes:

- 1. All dimensions are in millimeters.**
- 2. Module sheet metal tolerance shall be 0.38 mm or less.**



C2, C20 CONNECTOR PINOUT			
PIN	FUNCTION	PIN	FUNCTION
A	AUDIO IN	J	RTS
B	AUDIO IN	K	DATA IN
C	AUDIO OUT	L	DATA OUT
D	ISO +5 VDC	M	CTS
E	AUDIO OUT	N	ISO DC GND
F	NA	P	NA
H	CD	R	NA

NOTES (THIS DETAIL)

1. 2X WIDE System PCB Module Board.
2. Connectors C2S & C20S shall be mounted on the front plate and shall be M14 AMP with Spring Latch supports or•• equal.

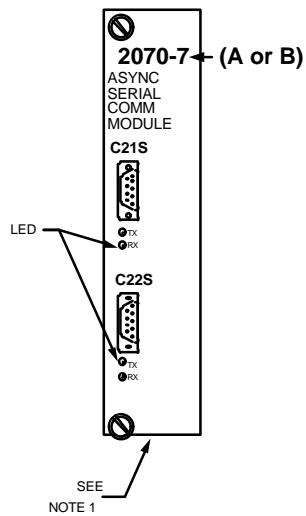
TITLE:

MODELS 2070-6A & 2070-6B
ASYNC/MODEM SERIAL COMM MODULE

NO SCALE

TEES, MARCH 1997

10-5-1



2070-7A (DB-9S)

C21 & C22 CONNECTOR PINOUT

PIN	FUNCTION
1	DCD
2	RXD
3	TXD
4	NA
5	ISO DC GND
6	NA
7	RTS
8	CTS
9	NA

2070-7B (DB-15S)

C21 & C22 CONNECTOR PINOUT

PIN	FUNCTION	PIN	FUNCTION
1	TX DATA +	9	TX DATA -
2	ISO DC GND	10	ISO DC GND
3	TX CLOCK +	11	TX CLOCK -
4	ISO DC GND	12	ISO DC GND
5	RX DATA +	13	RX DATA -
6	ISO DC GND	14	ISO DC GND
7	RX CLOCK+	15	RX CLOCK-
8	NA		

NOTES (THIS DETAIL)

1. 2 X WIDE FACEPLATE (SEE SYSTEM PCB MODULE, GENERAL DETAILS).

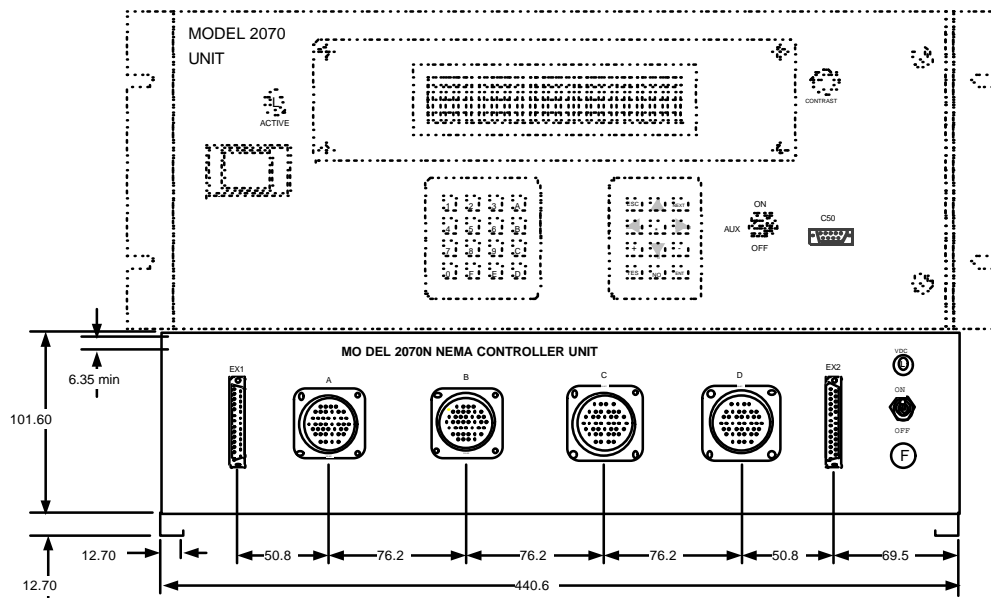
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MODEL 2070-7 (*)
ASYNC SERIAL COMM MODULE

NO SCALE

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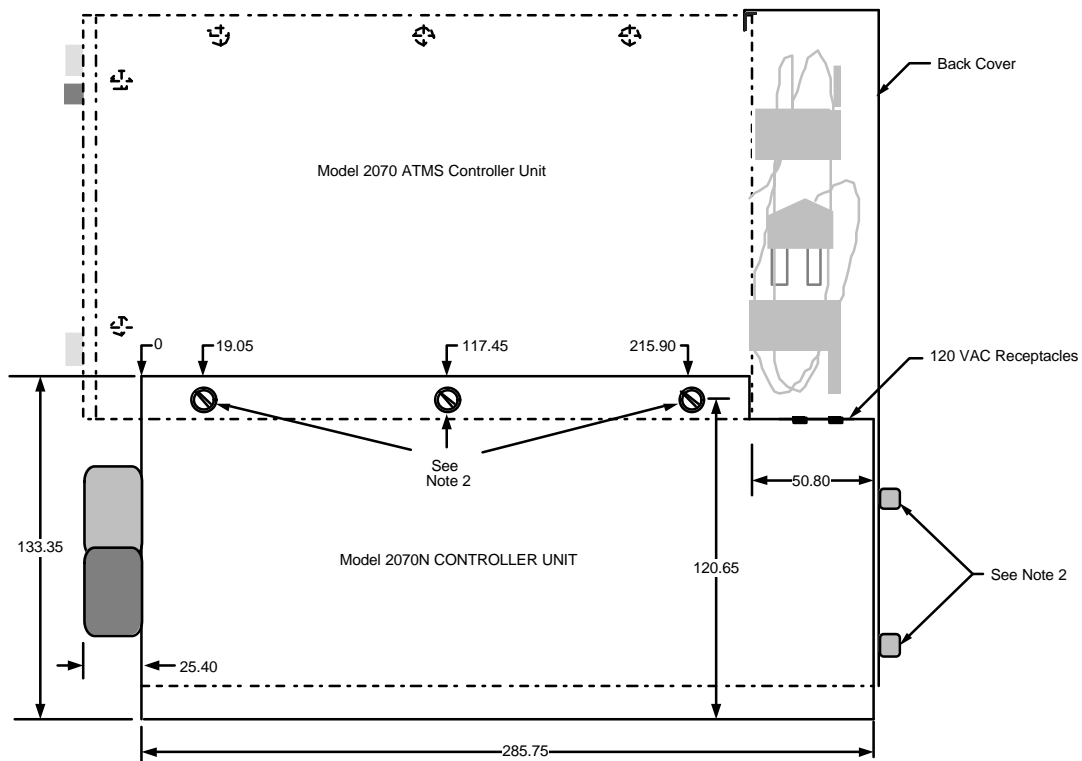
10-5-2



NOTES (THIS DETAIL)

1. The Model 2070 Controller Unit is shown only for reference.
2. The bottom supports shall be double flanged.
3. L = LED VAC power light
F = VAC fuse in fuseholder
DK = Data key
A = Connector A (MS-3112-22-55P Type)
B = Connector B (MS-3112-22-55S Type)
C = Connector C (MS-3112-24-61S Type)
D = Connector D (MS-3112-24-61P Type)
EX1 = Connector EX1 (DB-25S Type)
EX2 = Connector EX2 (DB-25S Type)
4. 2.286 mm wide spacers shall be provided between the inside wall of the 2070-8 Module and the 2070 Unit (each side).

2070N CONTROLLER UNIT (*)
FRONT VIEW



NOTES (THIS DETAIL)

1. The Model 2070 Controller Unit is shown only for reference.
2. TDS #3 Thumbscrew Devices. Module shall provide mating nuts permanently mounted on the module.

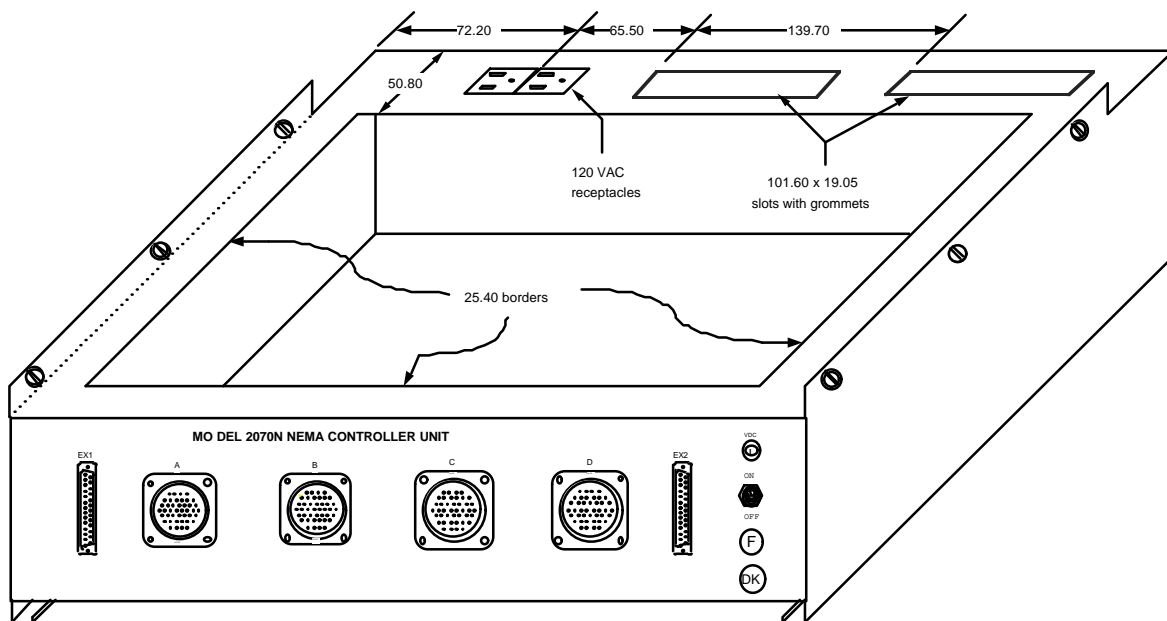
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2070N CONTROLLER UNIT (*)
SIDE VIEW

NO SCALE

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10-5-4



NOTES (THIS DETAIL)

1. The module housing bottom shall be slot vented. The top shall be open.

TITLE:

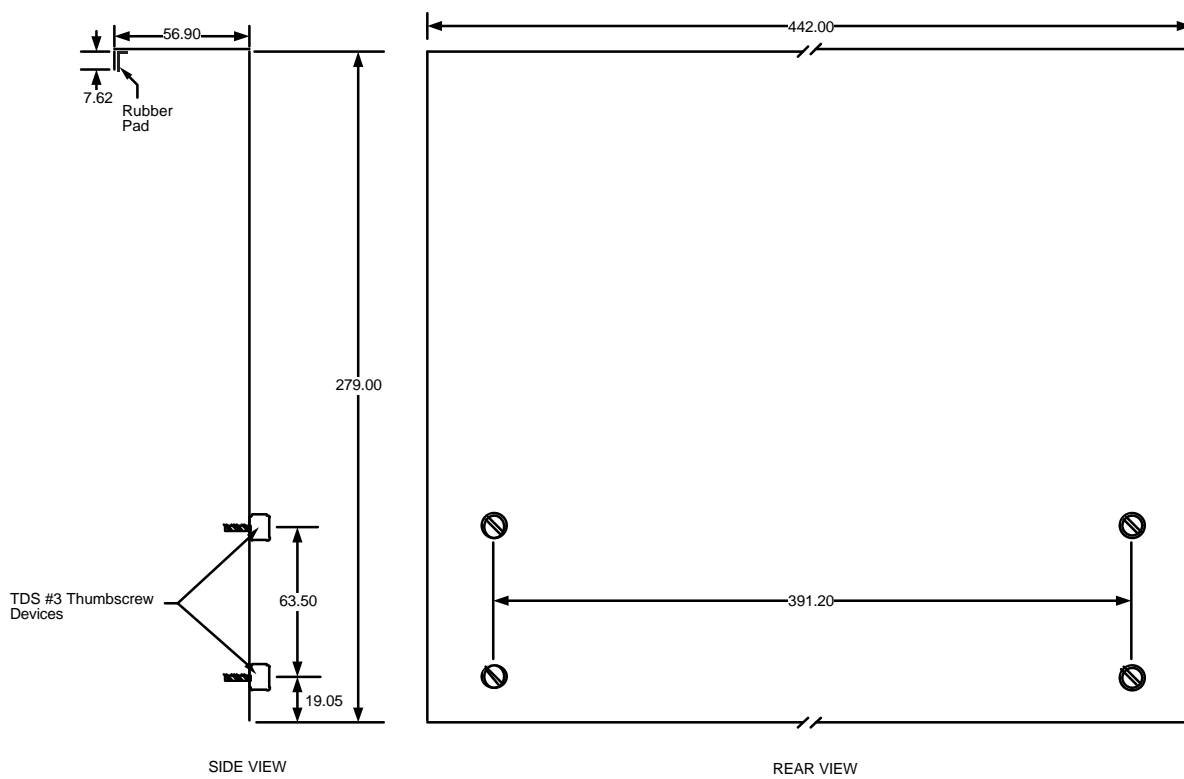
2070N CONTROLLER UNIT
ISOMETRIC VIEW

(*)

NO SCALE

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10-5-5



1. The overhang lip shall be notched 19.05 mm on each side.

TITLE:

2070N CONTROLLER UNIT
BACK COVER

NO SCALE

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10-5-6

CONNECTOR A				CONNECTOR B		
PIN	FUNCTION	I/O	PORT-BIT	FUNCTION	I/O	PORT-BIT
A	Fault Monitor	---	---	Phase 1 Next	Out	8-1
B	+24 VDC External	---	---	Reserved	In	9-5
C	Voltage Monitor	---	---	Phase 2 Next	Out	8-2
D	Phase 1 Red	Out	1-1	Phase 3 Green	Out	3-3
E	Phase 1 Don't Walk	Out	4-1	Phase 3 Yellow	Out	2-3
F	Phase 2 Red	Out	1-2	Phase 3 Red	Out	1-3
G	Phase 2 Don't Walk	Out	4-2	Phase 4 Red	Out	1-4
H	Phase 2 Ped Clear	Out	5-2	Phase 4 Ped Clear	Out	5-4
J	Phase 2 Walk	Out	6-2	Phase 4 Don't Walk	Out	4-4
K	Phase 2 Vehicle Detector	In	1-2	Phase 4 Check	Out	7-4
L	Phase 2 Pedestrian Detector	In	2-2	Phase 4 Vehicle Detector	In	1-4
M	Phase 2 Hold	In	3-2	Phase 4 Pedestrian Detector	In	2-4
N	Stop Timing (Ring 1)	In	6-2	Phase 3 Vehicle Detector	In	1-3
P	Inh Max Term (Ring 1)	In	6-3	Phase 3 Pedestrian Detector	In	2-3
R	External Start	In	8-1	Phase 3 Omit	In	5-3
S	Interval Advance	In	8-2	Phase 2 Omit	In	5-2
T	Indicator Lamp Control	In	8-3	Phase 5 Ped Omit	In	4-5
U	AC Neutral	---	---	Phase 1 Omit	In	5-1
V	Chassis Ground	---	---	Ped Recycle (Ring 2)	In	7-5
W	2070N DC Ground	---	---	Reserved	In	9-6
X	Flashing Logic Out	Out	11-7	Reserved	In	9-7
Y	Coded Status Bit C (Ring 1)	Out	12-3	Phase 3 Walk	Out	6-3
Z	Phase 1 Yellow	Out	2-1	Phase 3 Ped Clear	Out	5-3
a	Phase 1 Ped Clear	Out	5-1	Phase 3 Don't Walk	Out	4-3
b	Phase 2 Yellow	Out	2-2	Phase 4 Green	Out	3-4
c	Phase 2 Green	Out	3-2	Phase 4 Yellow	Out	2-4
d	Phase 2 Check	Out	7-2	Phase 4 Walk	Out	6-4
e	Phase 2 On	Out	9-2	Phase 4 On	Out	9-4
f	Phase 1 Vehicle Detector	In	1-1	Phase 4 Next	Out	8-4
g	Phase 1 Pedestrian Detector	In	2-1	Phase 4 Omit	In	5-4
h	Phase 1 Hold	In	3-1	Phase 4 Hold	In	3-4
i	Force Off (Ring 1)	In	6-1	Phase 3 Hold	In	3-3
j	Min Recall All Phases	In	8-4	Phase 3 Ped Omit	In	4-3
k	Manual Control Enable	In	8-5	Phase 6 Ped Omit	In	4-6
m	Call To Non-Actuated I	In	6-8	Phase 7 Ped Omit	In	4-7
n	Test Input A	In	9-1	Phase 8 Ped Omit	In	4-8
p	AC Power	---	---	Overlap A Yellow	Out	10-2
q	I/O Mode Bit A	In	8-6	Overlap A Red	Out	10-3
r	Coded Status Bit B (Ring 1)	Out	12-2	Phase 3 Check	Out	7-3
s	Phase 1 Green	Out	3-1	Phase 3 On	Out	9-3
t	Phase 1 Walk	Out	6-1	Phase 3 Next	Out	8-3
u	Phase 1 Check	Out	7-1	Overlap D Red	Out	11-6
v	Phase 2 Ped Omit	In	4-2	Reserved	In	9-8
w	Omit All-Red Clear (Ring 1)	In	6-7	Overlap D Green	Out	11-4
x	Red Rest Mode (Ring 1)	In	6-4	Phase 4 Ped Omit	In	4-4
y	I/O Mode Bit B	In	8-7	Not Assigned	---	---
z	Call To Non-Actuated II	In	7-8	Max II Selection (Ring 2)	In	7-6
AA	Test Input B	In	9-2	Overlap A Green	Out	10-1
BB	Walk Rest Modifier	In	9-4	Overlap B Yellow	Out	10-5
CC	Coded Status Bit A (Ring 1)	Out	12-1	Overlap B Red	Out	10-6
DD	Phase 1 On	Out	9-1	Overlap C Red	Out	11-3
EE	Phase 1 Ped Omit	In	4-1	Overlap D Yellow	Out	11-5
FF	Pedestrian Recycle (Ring 1)	In	6-5	Overlap C Green	Out	11-1
GG	Max II Selection (Ring 1)	In	6-6	Overlap B Green	Out	10-4
HH	I/O Mode Bit C	In	8-8	Overlap C Yellow	Out	11-2

TITLE:

NEMA INTERFACE I/O PORT CONNECTORS A & B (*)

NO SCALE

TEES, MARCH 1997

10-5-7

CONNECTOR C				CONNECTOR D		
PIN	FUNCTION	I/O	PORT-BIT	FUNCTION	I/O	PORT-BIT
A	Coded Status Bit A (Ring 2)	Out	12-4	Detector 9	In	10-1
B	Coded Status Bit B (Ring 2)	Out	12-5	Detector 10	In	10-2
C	Phase 8 Don't Walk	Out	4-8	Detector 11	In	10-3
D	Phase 8 Red	Out	1-8	Detector 12	In	10-4
E	Phase 7 Yellow	Out	2-7	Detector 13	In	10-5
F	Phase 7 Red	Out	1-7	Detector 14	In	10-6
G	Phase 6 Red	Out	1-6	Detector 15	In	10-7
H	Phase 5 Red	Out	1-5	Detector 16	In	10-8
J	Phase 5 Yellow	Out	2-5	Detector 17	In	11-1
K	Phase 5 Ped Clear	Out	5-5	Detector 18	In	11-2
L	Phase 5 Don't Walk	Out	4-5	Detector 19	In	11-3
M	Phase 5 Next	Out	8-5	Detector 20	In	11-4
N	Phase 5 On	Out	9-5	Detector 21	In	11-5
P	Phase 5 Vehicle Detector	In	1-5	Detector 22	In	11-6
R	Phase 5 Pedestrian Detector	In	2-5	Detector 23	In	11-7
S	Phase 6 Vehicle Detector	In	1-6	Detector 24	In	11-8
T	Phase 6 Pedestrian Detector	In	2-6	Clock Update	In	12-1
U	Phase 7 Pedestrian Detector	In	2-7	Hardware Control	In	12-2
V	Phase 7 Vehicle Detector	In	1-7	Cycle Advance	In	12-3
W	Phase 8 Pedestrian Detector	In	2-8	Max 3 Selection	In	12-4
X	Phase 8 Hold	In	3-8	Max 4 Selection	In	12-5
Y	Force Off (Ring 2)	In	7-1	Free	In	12-6
Z	Stop Timing (Ring 2)	In	7-2	Not Assigned	In	12-7
a	Inhibit Max Timing (Ring 2)	In	7-3	Not Assigned	In	12-8
b	Test Input C	In	9-3	Alarm 1	In	13-1
c	Coded Status Bit C (Ring 2)	Out	12-6	Alarm 2	In	13-2
d	Phase 8 Walk	Out	6-8	Alarm 3	In	13-3
e	Phase 8 Yellow	Out	2-8	Alarm 4	In	13-4
f	Phase 7 Green	Out	3-7	Alarm 5	In	13-5
g	Phase 6 Green	Out	3-6	Flash In	In	13-6
h	Phase 6 Yellow	Out	2-6	Conflict Monitor Status	In	13-7
i	Phase 5 Green	Out	3-5	Door Ajar	In	13-8
j	Phase 5 Walk	Out	6-5	Special Function 1	In	14-1
k	Phase 5 Check	Out	7-5	Special Function 2	In	14-2
m	Phase 5 Hold	In	3-5	Special Function 3	In	14-3
n	Phase 5 Omit	In	5-5	Special Function 4	In	14-4
p	Phase 6 Hold	In	3-6	Special Function 5	In	14-5
q	Phase 6 Omit	In	5-6	Special Function 6	In	14-6
r	Phase 7 Omit	In	5-7	Special Function 7	In	14-7
s	Phase 8 Omit	In	5-8	Special Function 8	In	14-8
t	Phase 8 Vehicle Detector	In	1-8	Preempt 1 In	In	15-1
u	Red Rest Mode (Ring 2)	In	7-4	Preempt 2 In	In	15-2
v	Omit All Red (Ring 2)	In	7-7	Preempt 3 In	In	15-3
w	Phase 8 Ped Clear	Out	5-8	Preempt 4 In	In	15-4
x	Phase 8 Green	Out	3-8	Preempt 5 In	In	15-5
y	Phase 7 Don't Walk	Out	4-7	Preempt 6 In	In	15-6
z	Phase 6 Don't Walk	Out	4-6	Alarm 1 Out	Out	12-7
AA	Phase 6 Ped Clear	Out	5-6	Alarm 2 Out	Out	12-8
BB	Phase 6 Check	Out	7-6	Special Function 1 Out	Out	13-1
CC	Phase 6 On	Out	9-6	Special Function 2 Out	Out	13-2
DD	Phase 6 Next	Out	8-6	Special Function 3 Out	Out	13-3
EE	Phase 7 Hold	In	3-7	Special Function 4 Out	Out	13-4
FF	Phase 8 Check	Out	7-8	Special Function 5 Out	Out	13-5
GG	Phase 8 On	Out	9-8	Special Function 6 Out	Out	13-6
HH	Phase 8 Next	Out	8-8	Special Function 7 Out	Out	13-7
JJ	Phase 7 Walk	Out	6-7	Special Function 8 Out	Out	13-8
KK	Phase 7 Ped Clear	Out	5-7	Not Assigned	---	---
LL	Phase 6 Walk	Out	6-6	Detector Reset	Out	11-8
MM	Phase 7 Check	Out	7-7	Not Assigned	---	---
NN	Phase 7 On	Out	9-7	+24 VDC	---	---
PP	Phase 7 Next	Out	8-7	2070N DC Gnd	---	---

TITLE:

NEMA INTERFACE I/O PORT CONNECTORS C & D (*)

NO SCALE

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10-5-8

EX1 CONNECTOR PINOUT	
PIN	FUNCTION
1	EQ GND
2	TxD FCU
3	RxD FCU
4	RTS FCU
5	CTS FCU
6	NA
7	2070-8 DC GND
8	DCD FCU
9	2070-8 DC GND
10	485 Tx Data+
11	485 Tx Data-
12	485 Tx Clock+
13	485 Tx Clock-
14	2070-8 DC GND
15	485 Rx Data+
16	485 Rx Data-
17	2070-8 DC GND
18	485 Rx Clock+
19	485 Rx Clock-
20	NA
21	NA
22	NA
23	NA
24	NA
25	NA

EX2 CONNECTOR PINOUT	
PIN	FUNCTION
1	EQ GND
2	TXD 1
3	RXD 1
4	RTS 1
5	CTS 1
6	NA
7	DC GND #1
8	DCD 1
9	AUDIO IN 1
10	AUDIO IN 1
11	AUDIO OUT 1
12	AUDIO OUT 1
13	NA
14	EQ GND
15	TXD 2
16	RXD 2
17	RTS 2
18	CTS 2
19	NA
20	DC GND #1
21	DCD 2
22	AUDIO IN 2
23	AUDIO IN 2
24	AUDIO OUT 2
25	AUDIO OUT 2

TITLE: 2070-8 NEMA MODULE (*)
EX1 & EX2 CONNECTOR PINOUTS

NO SCALE

TEES, MARCH 1997

10-5-9